

CLAIMS

1-15 (canceled)

16 (previously presented). A gallium nitride semiconductor light emitting device having emission wavelengths within a band corresponding to ultraviolet to green, comprising a semiconductor substrate, an active layer having a quantum well structure and made of nitride semiconductor containing at least indium and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less.

17 (previously presented). The gallium nitride semiconductor light emitting device according to claim 16, wherein each of the quantum well layers has electrons and holes uniformly distributed therein.

18 (previously presented). The gallium nitride semiconductor light emitting device according to claim 16, wherein the gallium nitride semiconductor light emitting device is a semiconductor laser device and the active layer forms an oscillating section of the semiconductor laser device.

19 (previously presented). The gallium nitride semiconductor light emitting device according to claim 18, wherein the semiconductor laser device is a self-oscillating semiconductor laser device.

20 (previously presented). The gallium nitride semiconductor light emitting device according to claim 18, further comprising a driving circuit for injecting an electric current into the semiconductor laser device.

21 (previously presented). The gallium nitride semiconductor light emitting device according to claim 20, wherein the electric current is a modulated current and a modulation frequency of the current is 300 MHz or more.

22 (previously presented). A gallium nitride semiconductor laser device having emission wavelengths within a band corresponding to ultraviolet to green, comprising a semiconductor substrate, an active layer having a quantum well structure and made of nitride semiconductor

containing at least indium and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer forms an oscillating section of the semiconductor laser device, and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less, and wherein one of the first and second cladding layers is a p-type cladding layer, and the p-type cladding layer has a ridge portion and a planar portion on opposite sides of the ridge portion.

23 (previously presented). The gallium nitride semiconductor laser device according to claim 22, wherein the ridge has a width of about 1 μm to 5 μm .

24 (previously presented). The gallium nitride semiconductor laser device according to claim 22, wherein said planar portion has a film thickness of 0.05 μm to 0.5 μm .

25 (previously presented). The gallium nitride semiconductor light emitting device according to claim 18, wherein said light emitting device generates a modulated optical output when an electric current is injected thereinto.

26 (previously presented). A gallium nitride semiconductor laser device having emission wavelengths within a band corresponding to ultraviolet to green, comprising a semiconductor substrate, an active layer having a quantum well structure and made of a nitride semiconductor containing at least indium and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer forms an oscillating section of the semiconductor laser device and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and one or more of the barrier layers has a layer thickness of 4 nm or less.

27 (previously presented). The gallium nitride semiconductor laser device according to claim 26, wherein each of the quantum well layers has electrons and holes uniformly distributed therein.

28 (previously presented). The gallium nitride semiconductor laser device according to claim 26, wherein each quantum well layer has a layer thickness of 10 nm or less.

29 (previously presented). The gallium nitride semiconductor laser device according to claim 26, wherein said nitride semiconductor forming said active layer consists essentially of nitrogen, indium and gallium.

30 (previously presented). The gallium nitride semiconductor laser device according to claim 26, wherein the semiconductor laser device is a self-oscillating semiconductor laser device.

31 (previously presented). The gallium nitride semiconductor laser device according to claim 26, further comprising a driving circuit for injecting an electric current into the semiconductor laser device.

32 (previously presented). The gallium nitride semiconductor laser device according to Claim 31, wherein the electric current is a modulated current and a modulation frequency of the current is 300 MHz or more.

33 (previously presented). The gallium nitride semiconductor laser device according to claim 26, wherein said laser device generates a modulated optical output when an electric current is injected into said laser device.

34. (previously presented) A gallium nitride semiconductor laser device having emission wavelengths within a band corresponding to ultraviolet to green, comprising a semiconductor substrate, an active layer having a quantum well structure and made of a nitride semiconductor containing at least indium and gallium, and a first cladding layer and a second cladding layer for sandwiching the active layer therebetween, wherein

the active layer forms an oscillating section of the semiconductor laser device and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and wherein one of the first and second cladding layers is a p-type cladding layer, and the p-type cladding layer has a ridge portion and a planar portion on opposite sides of the ridge portion.

35 (previously presented). The gallium nitride semiconductor laser device according to claim 34, wherein the ridge has a width of about 1 μm to 5 μm .

36 (previously presented). The gallium nitride semiconductor laser device according to claim 34, wherein said planar portion has a film thickness of 0.05 μm to 0.5 μm .